

with this knowledge, they were able to plan searches for larvae at other sites. Subsequently, on the night of 16 March 2004 Jim Reid searched Melwood, a small woodland near Meldreth, Cambridgeshire and found six Square-spotted Clay larvae in ten minutes searching. On 17 March Ted Ponting found two more larvae in Essex, feeding on Common Nettle next to an elm copse in Langley Upper Green.

The map for the Square-spotted Clay in *The Moths of Essex* shows that all the records for that county since 1990 are from two 10 km squares in the extreme north-west. Only one of these has earlier records, from 1960-89. However, shading of eight additional 10 km squares scattered around the periphery of Essex shows that the Square-spotted Clay was recorded more widely prior to 1960.

The larval search was undertaken as a part of a three year Biodiversity Action Plan project on this moth, being co-ordinated by the authors for Butterfly Conservation's Cambridgeshire and Essex Branch, with assistance from the Centre for Environment and Rural Affairs at Writtle College, Essex and a grant from English Nature. An abbreviated account of the discovery has already been presented in *British Wildlife* 15(5): 361-362). One correction has been made to that work – Phil Jenner moved to Chrishall in 2000, not 1999 as previously stated.— PAUL WARING and ROBIN FIELD, Centre for Environment & Rural Affairs, Writtle College, Essex. Contact address: Windmill View, 1366 Lincoln Road, Werrington, Peterborough PE4 6 LS (E-mail: paul_waring@btinternet.com).

Larval foodplants of the Barred Sallow moth *Xanthia aurago* (D. & S.) (Lep.: Noctuidae)

Some of the species of moths of the genus *Xanthia* are Nationally Scarce, others of Local status. Most are associated with woody plant species which are often minor components of the tree and shrub layer. As such, they are of great use to ecologists and conservationists. Presence of these moths helps in making the case for surveys to find out the distribution of such tree species on site. It also provides justification for special conservation measures to ensure adequate representation of such plants for all dependent invertebrates when felling, thinning, coppicing and other forms of management are planned. The Orange Sallow *X. citrargo* feeds on limes *Tilia* spp., the Dusky Lemon Sallow *X. gilvago* on Wych Elm *Ulmus glabra* and the Pale Lemon Sallow *X. ocellaris* on Black Poplar *Populus nigra* and hybrids. The much more widespread, well-distributed and numerous Sallow *X. ictéria* and Pink-barred Sallow *X. togata* feed on a range of sallows and poplars but begin larval development in the catkins and are of great use in flagging up the need to maintain trees of these species large enough to produce catkins, which are hugely important as sources of nectar and other food for a great many insects. Furthermore, the genus *Salix* is now recognised as supporting more species of insects in Britain than any other plant genus, including *Quercus* (Kennedy & Southwood, 1984. The number of species of insects associated with British trees: a re-analysis. *Journal of Animal Ecology* 53: 455-478).

The remaining member of the genus *Xanthia* in the British Isles is the Barred Sallow *X. aurago*. Since the nineteenth century, the standard textbooks state that this feeds on Beech *Fagus sylvatica* and Field Maple *Acer campestre*. From an ecologist's point of view, Beech is absent or not native over much of the range of the moth in Britain and on many sites the moth is therefore assumed to be dependent on Field Maple. This adds another dimension, because Field Maple is regarded as an indicator of ancient woodland sites in some parts of Britain (Rackham, 1980. *Ancient Woodland*). Accuracy in our knowledge of the foodplants of this species (as with many others) can be of considerable importance. Waring, Townsend and Lewington (*op. cit.*) add Pedunculate Oak *Quercus petraea* to the species from which the caterpillar of the Barred Sallow has been obtained from the wild and subsequently reared successfully. This is based on a record of a single larva beaten by Martin Townsend in Wychwood Forest, Oxfordshire in the spring of 2000, the adult emerging successfully in September 2000. Whilst having no reason to doubt this record, I decided I would try and obtain some eggs from the next female Barred Sallow I trapped so that I could rear the larvae and investigate their ability to feed on the stated foodplants. As Maple (Aceraceae), Beech and Oak (Fagaceae) is an odd combination of unrelated plants, I determined I would also offer other plants that are frequent where the moth occurs. In this I was intrigued to find that in Austria the Barred Sallow is considered polyphagous, according to the "HOSTS" database of larval host plants on the website of the Natural History Museum, although their source apparently does not list the species from which it has been obtained. Heath & Emmet (1984, *The moths of Great Britain and Ireland*. Vol. 10) in fact add that in captivity the larvae will accept Hornbeam *Carpinus betulus*, which is also listed by Allan (1947. *Larval foodplants*) who adds Sycamore *Acer pseudoplatanus* - a close relative of maples. The only other foodplant listed on the HOSTS website is *Vaccinium* (species not specified) based on a report from Finland.

On 28 September 2003, I light-trapped a female Barred Sallow in fresh condition in a Robinson light-trap in my garden in Peterborough. By 1 October, she had laid about thirty, bright orange eggs. These were over-wintered outdoors in a metal dustbin in a shady place at the far end of my garden. On 31 March 2004, the Field Maple in a hedgerow of native species I have established along one boundary had just started coming into leaf so I brought half of the batch of eggs indoors with leaves, for observation, and supplied the rest with leaves outdoors. On 2 April, the eggs started to hatch both indoors and outdoors and the signs of larvae feeding on the leaves were apparent the next day. Black frass was also seen collecting in loosespinnings of silk made over the underside of the leaves by the first instar larvae. The larvae grew rapidly as they were taken around the country on various trips, spending most of their time in the warmth of the car or indoors, so while their hatching time was probably about the same as in the wild, their development was likely to have been accelerated by higher temperatures. By 22 April, when I had a chance to begin experiments, the larvae had just started their final instar and had been feeding solely on Field Maple foliage. On 22 April, I offered several of the larvae freshly expanded Beech leaves from the local woodlands. These they accepted

straight away and consumed large areas of the leaf. While the leaves of Field Maple and Beech had nearly reached full-size by this date, it is worth noting that the leaves on the oaks were still small, brownish and furled. On 23 April, I divided the larvae between a number of containers, one or two larvae in each, with each container holding exclusively the foliage of Pedunculate Oak, Common Hawthorn *Crataegus monogyna*, Hazel *Corylus avellana*, English Elm *Ulmus procera*, or Goat Willow *Salix caprea*, while retaining other larvae on Field Maple and Beech. Twenty-four hours later the leaves of all the above species showed extensive feeding damage, evidence of sustained feeding by all the larvae. The larvae were inspected that morning at 08.00 hours, at which time several were actively feeding in the subdued light in the garage where they were kept. On 24 April, fresh leaves of the same species were added to each container, placing them over the leaves from the previous day, and one leaf of Field Maple was also added to see if this would be devoured in preference to the other species. Twenty-four hours later, at 10.00 hours on 25 April, the results were as follows: The larvae on Oak had eaten all the furled leaves and only the bracts remained, but the leaf of Field Maple in the box was completely undamaged. Likewise those on Elm and Beech had eaten large holes in the leaves (about 25% of leaf area consumed), but had not touched the Maple leaf. Those on Goat Willow and Hazel had continued to eat more, consuming up to 50% of the area of the smaller-sized leaves, but had also eaten a large amount of the Maple leaf. Those on the Common Hawthorn had eaten a little more but had damaged the Maple leaves extensively, consuming up to 50%, as had those on Maple alone. Several of the larvae were still in the act of feeding at this time. Evidently the larvae had not sought out the Maple leaves in strong preference over the other species available and some of the larvae may not have discovered the Maple leaves at all overnight.

Clearly, final instar larvae of the Barred Sallow are capable of feeding on the foliage of a wide range of unrelated broad-leaves in captivity. It is common experience that larvae often feed on a wider range of foodplants in confinement and in mainland Europe than they do in the wild in the British Isles, where they are often on the edge of their range and appear to be more restricted in habitat as well as foodplant. It is also frequently found that late instar larvae will eat and thrive on a wider range of foodplants than are accepted by the first instar. Both these observations limit the extent to which the above findings can be extrapolated to what happens in the wild in the British Isles, but at the very least we should be cautious in assuming that Field Maple, Beech and perhaps Oak are the only plants which our native populations of Barred Sallow are exploiting. Personally, I have never knowingly beaten the larva of the Barred Sallow in twenty years of beating a wide range of plants for moth larvae throughout the year. However, I have never searched for this species in particular and have beaten very little Field Maple or Beech in April or early May and at night. Accordingly, on the night of 14 May 2004 I went out to search one of our nearest and best stands of Field Maple, at Brakes Wood on the Milton Estate, near Castor Hanglands National Nature Reserve, Peterborough, accompanied by Mick Beeson. I spent 30 minutes beating from 23.00-23.30 hours but found no larvae of the Barred Sallow. I hope to try again on a range of dates and

sites in 2005. Meanwhile, if anyone has found and fed wild larvae of this species, particularly on foodplants other than Field Maple and Beech, I would be interested to hear from them.

Incidentally, the orange colour and domed shape of the freshly laid egg of the Barred Sallow is a perfect match to the small cushions of an orange mould which often develop on the stems of Field Maple, birches and probably other shrubs in the autumn. Later the fertile eggs turn a less conspicuous inky blue, in which state they remain until hatching in the spring. Infertile eggs can remain orange in the spring. I can also confirm that the larvae rest within their cocoons for several weeks before pupating and that adult moths were successfully reared from larvae no matter which of the above foodplants they had eaten in the final instar, though for practical reasons all of them were reared predominantly on Field Maple before and after the described feeding experiments.

I would like to thank Mick Beeson of the Milton Estate, Peterborough, for his help both in the field and in obtaining access permission from the Estate and Writtle College, Essex, for support in writing up these observations.— PAUL WARING, Reader, Centre for Environment & Rural Affairs, Writtle College, Essex. Address for correspondence: Windmill View, 1366 Lincoln Road, Werrington, Peterborough PE4 6LS.

ADDENDA ET CORRIGENDA

The following errors in relation to volume 115 (2003) have been communicated to the Editor:

page 284 The Queen of Spain Fritillary *Issoria lathonia* (L.) was recorded in Staffordshire on 3 August 2003, not on 30 August 2003 as printed. We apologise for this typing error on our part.

page 280 We are advised that the captions to Plates L and M are transposed. Thus, the upper picture, Plate L, is of the specimen collected at Charleval whilst the lower picture, Plate M, is that taken at St. Pierre de Vassols.

The following correction to volume 113 (for the year 2001) has been submitted.

pages 266 and 267. A section of text is missing, between the final word '*Gegenes*' ending page 266 and 'annually' on page 267. The complete sentence overlapping these two pages should read: "Two new butterfly species have been added to the Híos list, *Gegenes pumilio* (Hoffmansegg, 1804) (April 2000 at Kambiá Beach in north-west Híos; Dr Mike Hull) and *Danaus chrysippus* (Linnaeus, 1758) (recorded annually since 1996; voucher specimen taken at Káto Faná in south Híos in May 1996; Mr Mike Taylor)."